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TI **Copper wire** for bonding semiconductor devices -
contains trace amts. of titanium, nickel, zirconium and palladium etc..

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CYC 1

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The bonding **Cu wire** comprises high purity **Cu**
over 99.998 purity contg. 5-100 ppm by wt. of at least one of 3-50 ppm Ti,
Cr, Mn, and Fe respectively, 5-100 ppm Ni, and Co respectively and at
least one of 3-50 ppm Zr, and Nb respectively, 5-100 ppm Pd, **Ag**,
In, and **Sn** respectively.

USE/ADVANTAGE - The bonding **Cu wire** is used as a
substitute of **Au wire**, and satisfies not only minimum
requirements for a bonding **wire**, i.e., (a) high tensile strength
(b) high temp. strength, (c) capable of heat welding and supersonic
bonding, (d) near true sphere, and consistency of the ball shape, and (e)
high bond strength after bonding, but also has improved heat resistance
and corrosion resistance, and maintains electrical conductivity.

In an example, the **Cu wire** comprising by wt. 2
ppm Ti, 2 ppm Zr, and bal. 99.998 **Cu**, 25 micron dia. which was
made by repeated drawing and process heat treatment. It has T.S. 10.3 gr,
El. 20% at roomtemp., and T.S. 9.7 gr, El.15% at high temp., good ball
shape in bonding using combination of heat welding and supersonic
vibrations, bond strength after bonding 5.2 gr, hardness 41 Hv, and no tip
cracks.

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